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EXAMINER	
FLORES, LEON	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/525,966	Applicant(s) SHOJI ET AL.	
	Examiner LEON FLORES	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims (1-8) have been considered but are moot in view of the new ground(s) of rejection.

Response to Remarks

Applicant asserts that *"None of these cited portions of the specification appear to support the Examiner's position that "prior art does suggest the teaching of regenerating a reference signal sent by the transmitter in order to achieve synchronization."*

The examiner respectfully disagrees. Figure 7 in the background of the invention does suggest regenerating a reference signal in order to maintain synchronization. Furthermore, this figure is almost exactly as figure 4 in applicant 's claimed invention. The only difference is that figure 7 does not have the offset unit. However, taking the contrary, a new ground of rejection has been issued.

Applicant further asserts that *"the indicated portions of Meidan or Meidan as a whole do not disclose or render obvious frequency synchronization but only time/phase synchronization. In col. 7, lines 5-12".*

The examiner agrees. However, applicant is reminded that **MPEP 2141.02** states:

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S.

851 (1984) In a different portion of the reference of Meidan, it does teach frequency synchronization. (See col. 7, lines 5-12 "FCCH & SCH" & col. 9, lines 60-64)

Applicant further asserts that *"Meidan achieves only time synchronization"*.

The examiner respectfully disagrees. The reference of Meidan does teach frequency synchronization. (See col. 7, lines 5-12 "FCCH & SCH" & col. 9, lines 60-64)

Applicant finally asserts that *"In this case, Wakayama is a complex reference and the Examiner has failed to make a prima facie case of obviousness by explaining the relevance of the reference. Additionally, the outstanding Office Action does not respond to the Applicants' arguments that the AAPA, Meidan, Wakayama, and Yozo form a whole. Applicants maintain that the features recitedin the claims are parsed out of context and that the various reasons for combining the prior art are disconnected from the purpose of the claimed method. The rejection is an impermissible hindsight reconstruction based on juxtaposing unrelated teachings of the references"*.

The examiner respectfully disagrees. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). However, taking the contrary, a new ground of rejection has been issued.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. **Claims (1-3 & 5-7) are rejected under 35 U.S.C. 103(a) as being unpatentable over Meidan et al. (hereinafter Meidan) (US Patent 5,506,863)**

Re claim 1, Meidan discloses a frequency hopping wireless communication method for performing communications between a plurality of wireless communication terminals, each wireless communication terminal having a transmitting unit for generating a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by a local oscillation signal, and a receiving unit for generating an intermediate frequency band demodulation signal downconverted by multiplying a radio modulation signal by a local oscillation signal, and demodulating the signal in the intermediate frequency band modem, the frequency hopping wireless communication method comprising: transmitting a reference

local oscillation signal from a transmitting station (See fig. 2: 200 “base station” & col. 7, lines 5-12 “FCCH & SCH” & col. 9, lines 60-64); receiving the reference local oscillation signal from the transmitting station (See fig. 1: 100 “subscriber" & col. 8, line 18 – col. 9, line 9), amplifying (See fig. 1: 138 & col. 8, lines 8, lines 50-55) and band filtering the received signal (See fig. 1: 100 “it inherent and well known the use of band filters at the receiving end”), regenerating the reference local oscillation signal by an injection synchronous oscillator or an amplifier in each of the wireless communication terminals. (See fig. 1: 142, 141 & col. 8, lines 43-50 & fig. 3)

But the reference of Meidan fails to explicitly teach modulating a transmission signal in a frequency hopping system using the regenerated reference local oscillation signal; and performing mutual communications using the transmission signal which is demodulated in each receiving wireless communication terminal of the plurality of wireless communication terminals using the regenerated reference local oscillation signal.

However, the reference of Meidan does suggest (See fig. 1: 100 “subscriber unit”) modulating a transmission signal in a frequency hopping system using the regenerated reference local oscillation (106, 116, 141 & col. 8, lines 43-50, col. 10, lines 45-49.); and performing mutual communications using the transmission signal which is demodulated (124) in each receiving wireless communication terminal of the plurality of wireless communication terminals (“subscriber units”) using the regenerated reference local oscillation. (142, 141, col. 8, lines 43-50, col. 10, lines 45-49, col. 9, lines 38-45)

Therefore, it would have been obvious to one of ordinary skills in the art to

incorporate these features into the system of Prior art, as modified by Meidan, for the benefit of maintaining synchronization between the base station & the subscriber units.

Re claim 2, Meidan further discloses a dedicated transmitting station for transmitting only the reference local oscillation signal. (See fig. 2: 200 “base station” & col. 7, lines 5-12 “FCCH & SCH” & col. 9, lines 60-64)

Re claim 3, Meidan further discloses that wherein one wireless communication terminal of the plurality of wireless communication terminals acts as a base station or a parent station, and transmits a local oscillation signal for use in the base station or the parent station together with a radio modulation signal (See fig. 2: 200 “base station” & col. 7, lines 5-12 “FCCH & SCH” & col. 9, lines 60-64), and each child station, which is any wireless communication terminal of the plurality of wireless communication terminals other than the one wireless communication terminal acting as the base station or the parent station, receives the reference local oscillation signal transmitted by the base station or the parent station. (See fig. 1: 100 “subscriber" & col. 8, line 18 – col. 9, line 9, col. 9, lines 60-64)

Re claim 5, Meidan further discloses a frequency hopping wireless communication system comprising: a transmitting station for transmitting a reference local oscillation signal (See fig. 2: 200 “base station” & col. 7, lines 5-12 “FCCH & SCH” & col. 9, lines 60-64); and a plurality of wireless communication terminals (“frequency

hopping system), each wireless communication terminal having: a receiving unit (See fig. 1: 100 "subscriber" & col. 8, line 18 – col. 9, line 9) that amplifies (See fig. 1: 138 & col. 8, lines 8, lines 50-55) and band filters (See fig. 1: 100 "it inherent and well known the use of band filters at the receiving end") a signal received from the transmitting station to regenerate the reference local oscillation signal by an injection synchronous oscillator or an amplifier (See fig. 1: 142, 141 & col. 8, lines 43-50 & fig. 3), and generates an intermediate frequency band demodulation signal downconverted by multiplying a received radio modulation signal by the reference oscillation signal (See fig. 1: 124, 122, 120, col. 8, lines 43-50), and demodulates the intermediate frequency band demodulation signal in the intermediate frequency band modem. (See fig. 1: 124)

But the reference of Meidan fails to explicitly teach a transmitting unit that generates and transmits a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by the reference local oscillation signal.

However, the reference of Meidan does suggest (See fig. 1: 100 "subscriber unit") a transmitting unit that generates and transmits a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by the reference local oscillation signal. (106, 116, 141 & col. 8, lines 43-50, col. 10, lines 45-49.)

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Prior art, as modified by Meidan, for the benefit of maintaining synchronization between the base station & the subscriber units.

Claim 6 is a system claim corresponding to method claim 2. Hence, the steps performed by method claim 2 would have necessitated the elements in system claim 6. Therefore, claim 6 has been analyzed and rejected w/r to claim 2 above.

Claim 7 is a system claim corresponding to method claim 3. Hence, the steps performed by method claim 3 would have necessitated the elements in system claim 7. Therefore, claim 7 has been analyzed and rejected w/r to claim 3 above.

2. **Claims (4 & 8) are rejected under 35 U.S.C. 103(a) as being unpatentable over Meidan et al (hereinafter Meidan) (US Patent 5,506,863) in view of Wakayama (US Patent 6,130,905) and Yozo Shoji et al. (hereinafter Yozo) "Proposal of Millimeter-wave Self-heterodyne Communication System", Communications Research Laboratory, Ministry of Posts and Telecommunications, June 2000.**

Re claim 4, Meidan further discloses a frequency hopping wireless communication method for performing communications between a plurality of wireless communication terminals each wireless communication terminal having a transmitting unit for generating a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by a local oscillation signal, and a receiving unit for generating an intermediate frequency band demodulation signal downconverted by multiplying a radio modulation signal by a local oscillation signal, and demodulating the signal in the intermediate frequency band modem, the frequency hopping wireless communication method comprising:

upconverting a modulation signal generated in an intermediate frequency band to a radio frequency band using a local oscillation signal functioning as a hopping synthesizer by the transmitting unit in each of the plurality of wireless communication terminals, and simultaneously transmitting a frequency hopping radio modulation signal of a single-side band wave or a both- side band wave obtained by the upconverting, and the local oscillation signal used in the upconverting. (See fig. 2: 200 "base station" & (See fig. 2: 104, 106, 116 & col. 11, lines 12-19 & col. 9, lines 60-64)

But the reference of Meidan fails to teach downconverting a received signal by the receiving unit to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave, and then extracting two signal components, a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal, and a modulation signal component, by passing the downconverted signal through a band pass filter.

However, the reference of Meidan does suggest (See fig. 1) downconverting a received signal by the receiving unit to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave (142, 141 & col. 8, lines 43-50 & fig. 3), and then extracting two signal components, a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal ("the input to 142 from 122" & col. 8, lines 43-50, col. 10, lines 45-49.), and a modulation signal component, by passing the

downconverted signal through a band pass filter. ("the input to 124 from 122 & 100 "it inherent and well known the use of band filters at the receiving end")

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Prior art, as modified by Meidan, for the benefit of maintaining synchronization between the base station & the subscriber units.

The reference Meidan discloses the limitations as claimed above, except they fail to explicitly teach generating a product component of the two signal components, thereby regenerating a second intermediate frequency band modulation signal.

However, Yozo does. (See fig. 4 & sections 2 & 3, equation 2) Yozo discloses a receiver that performs square-law detection wherein generating a product component of the two signal components, thereby regenerating a second intermediate frequency band modulation signal.

Therefore, taking the combined teaching of Meidan and Yozo as a whole, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Meidan, in the manner as claimed and as taught by Yozo, for the benefit of eliminating the influence of the phase noise and frequency offset caused by mixing the local carrier at the transmitter. (See sections 1 & 2)

Re claim 8, Meidan further discloses a frequency hopping wireless communication system, comprising: a plurality of wireless communication terminals ("frequency hopping system"), each wireless communication terminal having a transmitting unit for generating a radio modulation signal by multiplying an intermediate

frequency band modulation signal from an intermediate frequency band modem by a local oscillation signal (See fig. 2: 200 “base station” & (See fig. 2: 104, 106, 116 & col. 11, lines 12-19 & col. 9, lines 60-64 & col. 11, lines 12-19), and a receiving unit for generating an intermediate frequency band demodulation signal downconverted by multiplying a radio modulation signal by a local oscillation signal, and demodulating the signal in the intermediate frequency band modem (See fig. 1: 124, 122, 120, col. 8, lines 43-50), wherein in each of the plurality of wireless communication terminals, the transmitting unit upconverts a modulation signal generated in an intermediate frequency band to a radio frequency band using a local oscillation signal functioning as a hopping synthesizer (See fig. 2: 200 “base station” & col. 7, lines 5-12 “FCCH & SCH” & col. 9, lines 60-64 & col. 11, lines 12-19), and simultaneously transmits a frequency hopping radio modulation signal of a single-side band wave or a both-side band wave obtained by the upconversion and the local oscillation signal used in the upconversion. (See fig. 2: 104, 106, 116 & col. 11, lines 12-19)

But the reference of Meidan fails to teach the receiving unit downconverts a received signal to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave.

However, Meidan does. (See figs. 1, 2: 108, 120, 122, 128, 141, 142 & col. 8, lines 6-50) Meidan discloses the receiving unit downconverts a received signal to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern

corresponding to a desired reception wave.

However, the reference of Meidan does suggest (See fig. 1) the receiving unit downconverts a received signal to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave (142, 141 & col. 8, lines 43-50 & fig. 3), and then extracts two signal components, a local oscillation signal component that is the local oscillation signal used in the upconverting the modulation signal ("the input to 142 from 122" & col. 8, lines 43-50, col. 10, lines 45-49.), and a modulation signal component, by passing the downconverted signal through a band pass filter. ("the input to 124 from 122 & 100 "it inherent and well known the use of band filters at the receiving end")

Therefore, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Prior art, as modified by Meidan, for the benefit of maintaining synchronization between the base station & the subscriber units.

The reference of Meidan discloses the limitations as claimed above, except they fail to explicitly teach that it generates a product component of the two signal components, thereby regenerating a second intermediate frequency band modulation signal.

However, Yozo does. (See fig. 4 & sections 2 & 3, equation 2) Yozo discloses a receiver that performs square-law detection wherein it generates a product component of the two signal components, thereby regenerating a second intermediate frequency band modulation signal.

Therefore, taking the combined teaching of Meidan and Yozo as a whole, it would have been obvious to one of ordinary skills in the art to incorporate these features into the system of Meidan, in the manner as claimed and as taught by Yozo, for the benefit of eliminating the influence of the phase noise and frequency offset caused by mixing the local carrier at the transmitter. (See sections 1 & 2)

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Hikoso et al (US Patent 5,400,359) disclose frequency hopping system that employs a square law detector.
- Jandrell (US Patent 6,459,704 B1) discloses frequency hopping transceiver.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. F./
Examiner, Art Unit 2611
May 27, 2009
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611